



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,408	07/18/2003	Kwun-Wing W. Cheung	7784-000625	6404
27572	7590	07/21/2006	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.				BRINEY III, WALTER F
P.O. BOX 828				ART UNIT
BLOOMFIELD HILLS, MI 48303				PAPER NUMBER
				2615

DATE MAILED: 07/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/623,408	CHEUNG, KWUN-WING W.
	Examiner Walter F. Briney III	Art Unit 2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 22 May 2006.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1,3-10,12-14,16-18,20-22 and 24-27 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1,3-10,12-14,16-18,20-22 and 24-27 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. **Claims 1, 6, 7, 9, 10, 12, 13, 17, 18, 20, 21, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parrella in view of Kolster (US Patent 1,675,031).**

**Claims 1, 10 and 18** have all been similarly amended in the current amendment.

Regarding claim 1 as the representative herein, it is noted that Parrella in view of Kolster makes obvious all limitations of the claims.

In particular, Parrella discloses “a plurality of selected interior passenger cabin panels” that have respective piezo elements 102-105 connected thereto as seen in figure 12. Column 5, lines 42-48, of Parrella indicates that the thicker panels of figure 12 are for producing high frequency audio while the thinner panels are for producing low and mid frequency audio. In other words, the thickness of a panel determines that panel’s frequency response, i.e. magnitude and phase response which are “acoustical characteristics specific to the respective panel.” The piezo elements correspond to the claimed “plurality of like excitors” that are clearly “affixed to each selected panel.”

Despite the applicant’s contention on page 10, line 26, through page 11, line 18, Parrella actually discloses a piezo exciter “directly affixed” to a panel in both figures 2 and 6B. See column 3, lines 13-15. By virtue of the connection between the piezo

exciters and the panels of the aircraft seen in figure 12, the exciters are “adapted to resonate each selected panel to generate sound waves.” Moreover, the inherent properties of the panels limit the resonance of the exciters to “within a frequency range determined by the acoustical characteristics of the respective panel.”

Figure 12 of Parrella depicts a crossover network 106 that corresponds to the “processing center” as recited. In particular, the crossover network 106 receives audio signals from PA system 107, “dynamically (i.e. continually) processes” said signals and “transmits” them to the plurality of exciters 102-105. See column 5, lines 52-55. The crossover network slits (i.e. “contours”) the audio signal from the PA system into higher and lower frequency components (i.e. “frequency range determined by the acoustical characteristics of the respective panels”) and respectively transmits the higher and lower frequency components to the thicker and thinner panels of the aircraft seen in figure 12. In this way, the audio signals from the PA are “contoured to be within the frequency range determined by the acoustic characteristics of the respective panel.”

As noted in the previous Non-Final Office Action filed 22 February 2006, Parrella does not disclose the shape of the audio signals, i.e. their frequency response, after being slit into two frequency components, and thus, fails to anticipate the last clause of claims 1, 10 and 18, i.e. “the amplitudes of the sound waves having frequencies near a lower outer boundary range of each bandwidth are progressively attenuated and the sound waves having frequencies near an upper outer boundary range of each bandwidth are progressively attenuated.” However, this deficiency is overcome by an obvious modification.

In particular, crossover networks and their principles were notoriously well-known in the prior art at the time of the invention. One such crossover is disclosed by Kolster. As seen therein, a plurality of speakers 131, 231 and 331 are coupled to a source of audio signals by way of tuned networks 125, 225 and 325. Kolster discloses the fact that speakers have inherent distortion based on natural resonances. As a result, every loudspeaker provides a different amount of efficiency over a certain frequency range. Kolster discloses that a crossover network with the ideal frequency response shown in figure 2 will provide a smooth curve 4 that is essentially free of distortion. See lines 56-97. With respect to the claim language, figure 2 clearly indicates that the frequencies near "a lower outer boundary range" of a "bandwidth" and near "an upper outer boundary range" of a "bandwidth" are "attenuated," resulting in "a smooth frequency cross-over."

It would have been obvious to one of ordinary skill in the art to design a crossover network to provide a flat frequency response even while using a plurality of loudspeakers that each include different resonant frequencies as taught by Kolster simply because Parrella fails to disclose the desired frequency response of the crossover network 106 and because doing so eliminates distortion.

**Claims 6, 7, 9, 12, 13, 17, 20, 21 and 27** are rejected for the respective reasons set forth in the Non-Final Rejection filed 22 February 2006 as well as those presented above regarding claims 1, 10 and 18.

2. **Claims 3, 16 and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Parrella in view of Kolster and further in view of Modafferi (US Patent 4,771,466).

**Claims 3, 16 and 24** are rejected for the respective reasons set forth in the Non-Final Rejection filed 22 February 2006 as well as those presented above regarding claims 1, 10 and 18.

3. **Claims 4, 5 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Parrella in view of Kolster in view of Modafferi and further in view of Takahashi et al. (US Patent 4,229,619).

**Claims 4, 5 and 25** are rejected for the respective reasons set forth in the Non-Final Rejection filed 22 February 2006 as well as those presented above regarding claims 1, 10 and 18.

4. **Claims 8, 14 and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Parrella in view of Kolster and further in view of Azima et al. (US Patent 6,324,294).

**Claims 8, 14 and 22** are rejected for the respective reasons set forth in the Non-Final Rejection filed 22 February 2006 as well as those presented above regarding claims 1, 10 and 18.

5. **Claim 26** is rejected under 35 U.S.C. 103(a) as being unpatentable over Parrella in view of Kolster in view of Modafferi in view of Takahashi and further in view of Azima.

**Claim 26** is rejected for the respective reasons set forth in the Non-Final Rejection filed 22 February 2006 as well as those presented above regarding claims 1, 10 and 18.

***Response to Arguments***

Applicant's arguments filed 22 May 2006 have been fully considered but they are not persuasive.

**With respect to claim 1**, the applicant alleges on page 10, line 26, through page 11, line 18, that Parrella does not disclose "at least one like exciter directly affixed to each selected panel;" to which the examiner respectfully disagrees. This argument was shown to be unpersuasive under the new grounds of rejection concerning claim 1. In particular, Parrella depicts piezo devices directly affixed to a panel in figures 2 and 6B.

On page 11, line 27, through page 12, line 23, that the processing center of the claim does not correspond to a crossover network as disclosed by Parrella. It is submitted that this argument is a mere allegation of patentability. The applicant appears to define a processing center and a crossover network, but any difference is beyond the explanation provided. As shown in the rejection, Parrella designed the crossover network of figure 12 to slit audio signals into higher and lower frequency ranges that are conducive to being reproduced by thicker and thinner panels, respectively. How this differs from what is claimed is unclear.

On page 12, line 24, through page 13, line 6, the applicant alleges that Parrella does not teach the last clause of claim 1. However, the examiner already admitted this and cited Kolster to overcome the deficiency.

On page 13, lines 7-28, the applicant alleges that Kolster does not teach the last clause of claim 1. However, the applicant again appears to be merely alleging a difference without specifically pointing out how the claim language differentiates the

invention from the prior art. At most, the applicant appears to define what Kolster shows, and then concludes that this is different from the invention. To the contrary, the Kolster clearly depicts in figure 2 that each diaphragm 130/230/330 of figure 1 is driven with an electrical signal 1/2/3 that is progressively attenuated near a lower outer boundary range and an upper outer boundary range. Therefore, as all of the applicant's arguments have been shown to be either moot or unpersuasive, the rejection of claim 1 is maintained.

**With respect to claims 3-10, 12-14, 16-18, 20-22 and 24-27**, the applicant alleges the patentability of these claims given either their dependence on claim 1 or their similarity thereto. However, as all of the applicant's arguments concerning claim 1 have been shown to be either moot or unpersuasive, the rejections of claims 3-10, 12-14, 16-18, 20-22 and 24-27 are maintained.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter F. Briney III whose telephone number is 571-272-7513. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
SINH TRAN  
SUPERVISORY PATENT EXAMINER

WFB